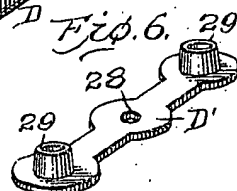
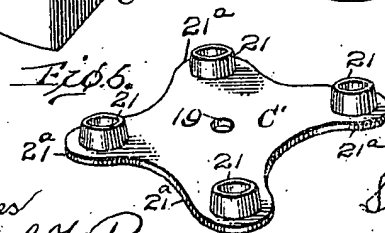
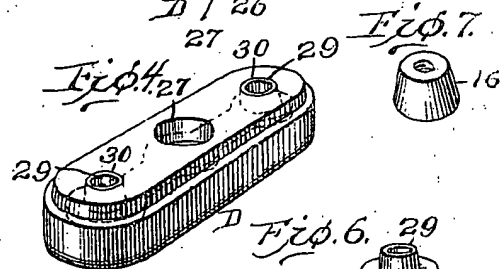
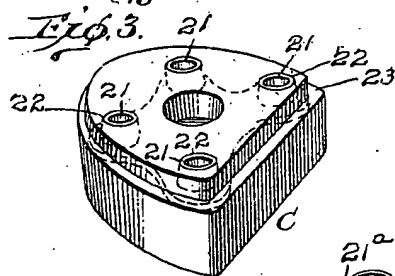
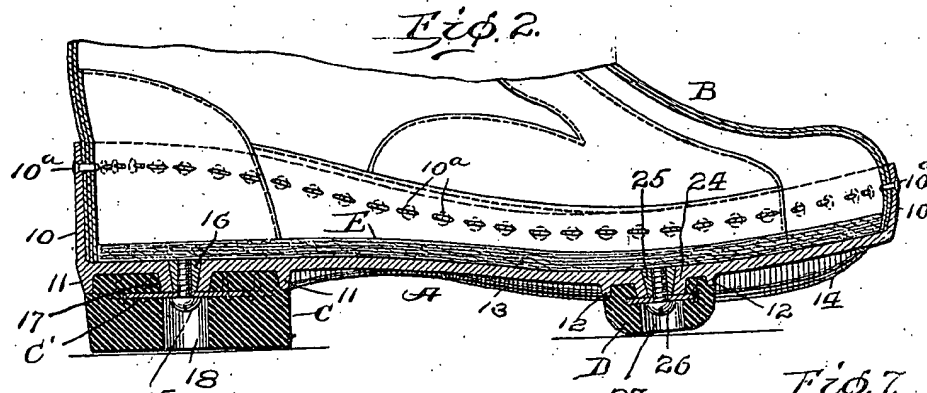
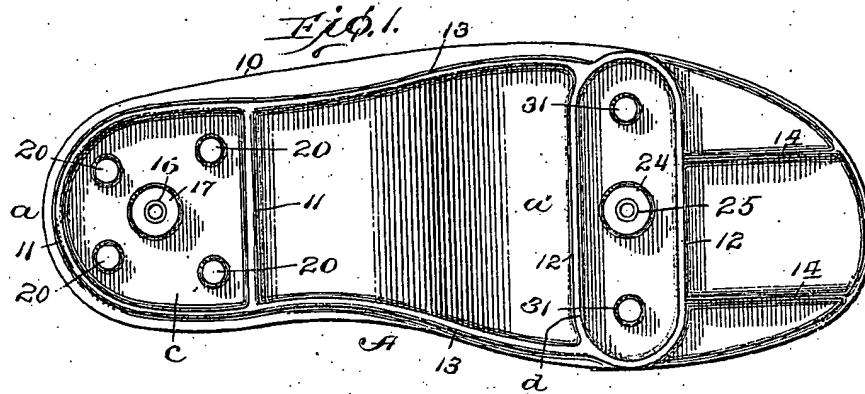


S. TROLLE.
 BOOT, SHOE, AND THE LIKE.
 APPLICATION FILED DEC. 23, 1914.

Patented June 1, 1915.

1,141,889.



Witnesses
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SOFUS TROLLE, OF RACINE, WISCONSIN, ASSIGNOR TO RACINE ALUMINUM SHOE COMPANY, OF RACINE, WISCONSIN.

BOOT, SHOE, AND THE LIKE.

1,141,889.

Specification of Letters Patent.

Patented June 1, 1915.

Application filed December 23, 1914. Serial No. 878,811.

To all whom it may concern:

Be it known that I, SOFUS TROLLE, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in Boots, Shoes, and the like, of which the following is a specification.

This invention has reference to a boot, shoe or the like article of footwear, hereinafter generally called "shoe," having one or more readily removable ground-engaging members and embodying an improved construction or correlation of parts productive of important benefits, such as hereinafter set forth.

The invention comprises a shoe bottom having an inflexible section provided with a recess which receives the ground-engaging member, the latter projecting downwardly from the recess and having elements which cooperate with corresponding elements in the recess for effectively holding the ground-engaging member against accidental displacement, while permitting said member to be readily removed.

More particularly, the invention includes a novel correlation of holding and displacement-preventing elements for the ground-engaging member or members of the bottom, by which the ends of the invention are adequately obtained.

The invention also comprises a particular construction of ground-engaging member.

The term "bottom" or "shoe bottom" wherever used in this specification is intended to be construed generically as meaning that part of a shoe, boot or other article of footwear, which is arranged below the "upper" and, hence, as including what is commonly known as—or what corresponds to—the "sole" and also as including what is commonly known as—or what corresponds to—the heel of the article.

The improvements forming the present invention are herein exemplified as being embodied in the type of boots, shoes and the like, whose bottoms are formed of metal. Such articles of footwear are particularly intended for the use of lumbermen, stablemen, quarrymen, farmers, workers in breweries, garages, creameries and other wet places,—and others who require footwear which will withstand rough usage and protect the feet against moisture, cold, briars,

rocks, stones, and their effects. When applied to or embodied in this particular type or class of footwear there are preferably a plurality of ground-engaging members respectively arranged upon those portions of the bottom which are directly under the heel and ball of the foot of the wearer; the improvements aiming to increase to a maximum degree the comfort with which such articles of footwear may be worn as well as to so correlate the ground-engaging members with the metallic bottom that said ground-engaging members, which receive the greatest wear and are made of relatively soft or of flexible material, will be effectively held against pivotal or other movement relatively to the bottom and at the same time may be readily removed and replaced by a new one by the user, whether skilled or unskilled in such matters.

Reference has hereinbefore been made to the substitution of a new ground-engaging member for a worn one, but it will be understood that it is within the spirit of the invention to embody the invention in a ground-engaging member which itself is to be removed from and replaced upon an appropriate part of the shoe bottom.

In the accompanying drawings, I have illustrated and in the following description I have set forth the preferred embodiment of the present invention. While this preferred embodiment will be set forth with particularity it nevertheless should be understood that it is merely exemplary and that other particular embodiments thereof may be resorted to and features of the invention may be variously embodied without departing from the spirit of the invention or the scope of the subjoined claims.

In the accompanying drawings, wherein like characters of reference denote corresponding parts in the several views: Figure 1 is an inverted plan view showing the form of metallic bottom which I prefer to employ; Fig. 2 is a vertical longitudinal section through a shoe or boot exemplifying the preferred embodiment of the present invention; Fig. 3 is a detail perspective view of the relatively soft heel member employed in the present invention; Fig. 4 is a detail perspective view of the relatively soft sole section preferably employed in the present invention; Fig. 5 is a detail perspective view

of the metallic reinforcing element of the heel member; Fig. 6 is a like view of the metallic reinforcing section of the sole member; and Fig. 7 is a detail view of the bushing employed as an element of the attaching means for the heel member or sole member.

A designates the bottom and B the upper of a boot, shoe or like article of footwear embodying the present improvements. The bottom A is preferably made of metal, an alloy of aluminum being preferred; and the upper is preferably made of leather, but any other suitable materials may be employed for these parts. In the herein exemplified form of the invention, the bottom A is formed to provide a heel section *a* and a sole section *a'* integral with each other and has an upstanding marginal flange 10 to which the lower part of the upper is secured by rivets 10^a.

C and D designate ground-engaging members which are detachably secured to the bottom A in recesses *c* and *d* formed respectively in the heel section *a* and under the ball of the foot in the sole section *a'*. These ground-engaging members are formed of a relatively soft material—rubber, or a suitable composition which includes rubber and which can be molded—being preferred.

The member C forms the heel of the article and the member D forms a section of the sole which is so arranged that the foot may rock thereon, in walking, thereby conducing to the comfort of the wearer. The under surfaces of these members may, if desired, be suitably roughened to give them a hold upon a slippery surface.

The recess *c* into which the upper end of the member C extends is preferably provided by forming the heel section *a* of the bottom A with appropriately arranged depending flanges 11 and the recess *d* into which the upper end of the member D extends is preferably provided by forming the sole section *a'* of the bottom with appropriately arranged flanges 12. The bottom A also preferably has depending longitudinal side flanges 13 which connect the ends of the front flange 11 at the recess *c* with the ends of the rear flange 12 at the recess *d*, and also has longitudinal spaced flanges 14 which extend from the forward flange 12 at the recess *d* to the front end of the bottom A. The flanges 14 are tapered upwardly from their rear ends toward the toe of the article and are deeper at their rear ends than the flange 12. They serve to stiffen the bottom under the toe section of the article and also serve as rocker bars which cooperate with the transverse member D in enabling the wearer to walk with maximum ease and comfort notwithstanding the inflexible nature of the bottom A.

The ground engaging members are pro-

vided with metallic reinforcing elements C' and D', respectively, which are embedded therein and receive the means by which the members C and D are secured. These securing means include fastening elements as the screws 15 and 26 for the respective members and internally threaded bushings 16 and 25 for receiving the respective screws. These bushings are important elements particularly when the bottom or the section or sections thereof to which the ground engaging member or members are secured are made of aluminum, or an alloy thereof, or a like material. The bushings are so arranged with relation to the metallic sections of the bottom that they will be firmly secured against accidental displacement from the latter and yet may be readily detached, and replaced by new ones, when it is desired to renew the ground-engaging members. Preferably, they are downwardly tapered and respectively arranged in correspondingly shaped openings in the bottom. The openings for the bushings extend through the inner surface of the bottom in order to give access to the bushings for the insertion and removal thereof. The portion of the bottom A having the openings referred to preferably includes hollow bosses 17 and 24 and these bosses are preferably externally tapered and extend into openings 18 and 27 formed in the members C and D, respectively. The screws 15 and 26 extend through openings 19 and 28 in the reinforcing elements C' and D' of the members C and D, respectively, and into the bushings 16 and 25, which are immediately above the reinforcing elements, and when tightened hold the ground-engaging members upon the bottom.

The reinforcing elements C' and D' are arranged on the members C and D, preferably near the tops of the latter, so that each member has a sufficient thickness of cushioning material between it and the ground to lessen or remove the shock which when walking would be experienced with footwear having inflexible bottoms in contact with the ground. The parts of the ground-engaging members which enter the recesses in the metallic sections of the bottom are preferably narrower than the parts which protrude from said recesses, shoulders 23 and 23^a being formed at the junctions of these parts to be engaged by the flanges 11 and 12.

Additional holding elements are provided by interengaging studs and sockets which are spaced around the bosses and screws. It is preferred to form the studs as integral parts of the bottom and the sockets as integral parts of the reinforcing elements of the ground-engaging members and this arrangement is shown in the drawings: 20 designating the studs—of which four are employed—for the heel member C and 21 des-

ignating the sockets to receive said studs, while 31 designates the studs for the sole member D—two being preferably employed—and 29 the sockets to receive the latter studs. In practice, the reinforcing element C' is preferably formed of a plate having concaved edges to provide radial arms 21^a from the outer ends of which the sockets 21 project upward through openings 22 formed in the member C. Similarly, the reinforcing element D' has its opposite ends provided with the sockets 29 which project upward from the element through openings 30 formed in the sole member D. The studs 21 and 31 for the heel and sole sections are arranged in the recesses *c* and *d* for the heel and sole members, respectively, in positions corresponding to those of the sockets which they respectively enter.

The opening 18 in the heel member C and the opening 27 in the sole member D extend through the under surfaces of said members in order to afford access to the heads of the screws 15 and 26. It will be understood that by placing the members C and D into their respective seats *c* and *d* the studs in the latter will enter the respective sockets in the former, and the bosses 17 and 24 will enter the openings 18 and 27 respectively and that the securing of the members C and D in place is completed by inserting the screws 15 and 26 into the bushings 16 and 25, respectively, and tightening the screws, the tightening of the screws drawing the tapered bushings tightly to place and holding the members C and D securely against the bottom A. It will be noted that the heads of the screws 15 and 26 are arranged a considerable distance above the lower surfaces of the members C and D and are subjected to no wear whatever and are so disposed that they can be readily reached by a screw driver whenever it is desired to tighten or remove them. New ground-engaging members may readily be substituted for old or worn ones by any person whether skilled or unskilled as is apparent. It is preferred in practice to furnish new bushings and screws with new ground-engaging elements, the old bushings being readily removable merely by driving them out of the bosses, the tapered formation of the bushings and bosses facilitating the removal of the bushings.

The article preferably includes a removable inner sole E of suitable material, arranged on the bottom A between the latter and the foot of the wearer.

While I prefer to embody my improvements in an article of footwear which has an inflexible bottom formed with integral sole and heel sections, it will be understood that the invention may be embodied in an article of footwear in which provision is made for the use of one of said ground engaging members only. For example, a heel for a shoe

which in other respects is made of leather, may be formed of the member C and the metallic seat, with the boss 17 and studs 20 here shown as being a part only of the bottom A. The term "bottom" used herein accordingly is intended to apply to an inflexible member formed to receive the upper end of either one of the ground engaging members and is not intended to apply only to a construction having provision for both of said members.

Having now described the invention what I believe to be new and desire to secure by Letters Patent, is—

1. An article of foot wear having a bottom provided with an inflexible section, a ground engaging member having an opening which extends through it and a part which extends across the opening, the inflexible section having a boss which extends into said opening and also having an opening which extends through the boss and is open at the inner surface of the bottom, a bushing removably mounted in the opening in the boss and held therein against displacement, the said bushing being hollow, and a fastening element extending through the part of the ground engaging member which extends across the opening in the latter, the said fastening element also extending into the bushing and being secured to the latter.

2. An article of foot wear having a bottom provided with an inflexible section, a ground engaging member having an opening which extends through it and a part which extends across the opening, the inflexible section having a hollow boss which is downwardly tapered internally and extends into said opening and also having an opening which extends through the boss and is open at the inner surface of the bottom, a hollow, externally tapered internally threaded bushing removably mounted in the opening in the boss and a fastening screw which extends through the part extending across the opening in the ground engaging member and also engages the bushing.

3. An article of foot wear having an inflexible section provided with a recess having spaced projections, a relatively soft ground engaging member whose upper end is seated in the recess, said member having embedded therein a metallic reinforcing element with projections to engage the projections in the recess of the bottom, and means engaging the metallic reinforcing element for detachably securing the ground engaging member to the inflexible section.

4. An article of foot wear having an inflexible section provided with a recess having a set of spaced projections, a relatively soft ground engaging member whose upper end is seated in the recess, said member having embedded therein a metallic reinforcing element with a set of projections to engage

the projections in the recess of the inflexible section, one set of said projections being hollow and receiving the other set, and means engaging the metallic reinforcing element for detachably securing the ground engaging member to the inflexible section.

5. An article of foot wear comprising an inflexible section having a recess and formed within the boundaries of the recess with a hollow boss and studs, a relatively soft ground engaging member formed with an opening to receive said boss and having a metallic reinforcing element provided with hollow projections to receive the studs, and means having connection with the reinforcing element and boss for securing the ground engaging member detachably to the inflexible section.

6. An article of foot wear comprising an inflexible section having a recess and formed within the boundaries of the recess with a hollow boss and studs, a downwardly tapered removable bushing in said boss, a relatively soft ground engaging member formed with an opening to receive said boss and having a metallic reinforcing element provided with hollow projections to receive the studs, said element also having an aperture which registers with the bushing, and a fastening screw which extends through said aperture and engages the bushing, the opening in the ground engaging member extending below said screw and through the lower surface of the member.

7. A relatively soft detachable ground engaging member for an article of foot wear, comprising a body, and a metallic reinforcing element embedded in said body, said element having upstanding hollow spaced-projections and provided between said projections with an aperture adapted to receive a fastening element.

8. An article of footwear having its bottom provided with an inflexible section having a recess and a boss and spaced studs within the boundaries of the recess, the inflexible section having an opening which extends from the inner surface of the bottom and through the boss, a bushing detachably mounted in the boss and held therein against accidental displacement, a relatively soft ground-engaging member having an opening to receive the boss and provided with a reinforcing element having hollow projections to receive the studs, and a fastening element arranged in the opening in the ground-engaging member and engaging the

reinforcing element and also having connection with the bushing.

9. An inflexible section for an article of footwear, the said section being provided with a boss and having an opening which extends from its inner surface and through the boss, said section also having projections which are spaced from the boss, a hollow bushing removably mounted in the boss and held against accidental displacement, a relatively soft ground engaging member having an opening to receive the boss and provided with a reinforcing element which extends across the opening and has projections which engage the projections of the inflexible section, the projections of the inflexible section and reinforcing element conjointly forming holding elements for the ground engaging member and a fastening element extending through the reinforcing element and into the bushing.

10. An inflexible section for an article of footwear, the said section being provided with a downwardly open recess and with a hollow boss and projections spaced from the boss, the said boss and projections extending downwardly from the upper wall of the recess and said wall having an opening which registers with the opening through the boss, a hollow bushing removably mounted in the boss and held against accidental displacement, a relatively soft ground engaging member having an opening which extends entirely through it from top to bottom, the upper part of said member being seated in the recess in the inflexible section and being provided with a metallic reinforcing element which is embedded and extends across the opening, the boss extending into the opening and being arranged immediately above the reinforcing element, the reinforcing element having projections corresponding to those of the inflexible section, one set of said projections being hollow and receiving the other, and a fastening element which is accessible through the lower part of the opening in the ground engaging member and extends through the reinforcing element and engages the bushing.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SOFUS TROLLE.

Witnesses:

H. E. WILLIAMS,
J. CHRISTENSEN.